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FINANCIAL LIBERALIZATION AND CAPITAL FLIGHT: EVIDENCE FROM THE AFRICAN CONTINENT*

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Abstract

During the past decades, many countries experienced considerable capital flight. Residents moved their wealth abroad, using different ways to accumulate foreign assets. Since the 1990s, several of these countries reformed their domestic financial markets in an attempt to improve the functioning of their domestic financial systems and to increase the efficiency of resource allocation—that is, to enhance financial development. In this paper, we examine the relationship between financial liberalization and capital flight, with special emphasis on countries on the African continent, and carry out an empirical analysis using data for a sample of 18 countries from this region for the period 1973–2005. We find that whereas reforms related to opening up domestic banking markets for new domestic and foreign entrants and bank privatization programs seem to reduce capital flight, policies focusing on liberalizing the capital account increase capital flight.

Key Words: Capital flight; Africa; sub-Saharan Africa; financial liberalization; financial reforms; financial markets

JEL Classifications: G11; O55; E44

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1. Introduction

Since the early 1970s, several countries, and especially many in the African region, have experienced considerable capital flight. Capital flight refers to residents moving their wealth abroad, using different ways to accumulate foreign assets. As has been argued in the literature, this may have strongly detrimental effects on domestic investment, economic growth, tax income, and poverty (Tornell and Velasco, 1992; Collier et al., 2004; Beja, 2007a; Yalta, 2010; African Development Bank et al., 2012). At the same time, since the early 1980s, many countries, including several in Africa, have reformed their domestic financial markets in an attempt to improve the functioning of their domestic financial systems and to increase the efficiency of resource allocation—that is, to enhance financial development (Fowowe, 2013). These reforms were triggered by both domestic and international developments. On the one hand, government policies focusing on controlling financial markets were increasingly criticized, because they were seen as causing the inefficient functioning and development of domestic financial institutions (McKinnon, 1973; Shaw, 1973). On the other hand, globalization of financial markets put pressure on governments to reduce financial market and capital account controls. The general belief was that lifting these controls and integrating with the world economy would ultimately contribute to enhanced economic growth. For this reason, financial reforms have been strongly promoted by, among others, the International Monetary Fund (IMF) and the World Bank.

A considerable part of the literature has focused on discussing potential factors that may determine the occurrence and size of capital flight (Hermes et al., 2004). Interestingly, investigating the relationship between financial liberalization and capital flight has been almost left untouched, notable exceptions being studies by Lensink et al. (1998) and Yalta and Yalta (2012). In this paper we extend the research into this relationship, with special emphasis

on African countries. The paper begins with a discussion of the theory that supports the possible relationship between financial liberalization and capital flight. Next, we develop an empirical analysis of the relationship. We start by discussing our measurement of the different concepts. Financial liberalization may have different dimensions, which may influence the potential for capital flight in different ways. We then carry out the empirical analysis using data on financial liberalization (from Abiad et al., 2010) for a sample of 18 African countries for the period 1973–2005. Our results may contribute to discussions about financial liberalization policies for countries that lack capital and have been prone to capital flight.

The remainder of this paper is organized as follows. In section 2, we elaborate on how financial liberalization may impact capital flows in general and capital flight in particular. Sections 3 and 4 then discuss the measurement of the central concepts in the analysis, namely, financial liberalization and capital flight. In these sections, we also discuss briefly the trends in these variables for the 18 African countries in our sample for the period 1973–2005. After describing the empirical method and the data sources used for the other variables in section 5, we discuss the results of the multivariate analysis in section 6. The paper concludes with a summary and discussion of limitations in section 7.

2. Financial liberalization and capital flight: A review

2.1 The link between financial development and financial liberalization

There is a large literature, both theoretical and empirical, emphasizing the importance of developed financial markets and institutions in the process of economic development and growth. Financial markets and institutions provide several crucial services such as savings mobilization, agglomeration of financial resources, diversifying and pooling risk, maturity transformation, and screening, monitoring and enforcing investment projects (Levine, 2005).

In providing these services, they efficiently transform savings into investment, raising both the quantity and quality of investment projects. Moreover, they provide a payment system that makes trade among economic participants more efficient. Financial development occurs when a financial system improves on performing these functions. Ultimately, this should contribute to higher levels of economic development. In a series of papers using an extensive multi-country panel data set, King and Levine (1993a, 1993b, and 1993c) empirically show that the level of financial development is strongly associated with the growth of real GDP per capita, the rate of physical capital accumulation, and the productivity of physical capital available in an economy. Their results have been generally confirmed in later studies. It has also been shown that legal structures are important determinants of how financial systems evolve (Levine, 1999).

Closely related to the discussion of the relationship between finance and growth is the discussion of the role financial liberalization plays in this relationship. In the empirical literature, financial liberalization includes official government policies that focus on deregulating credit and interest rate controls, removing entry barriers for foreign financial institutions, privatizing financial institutions, and removing restrictions on foreign financial transactions (i.e., opening up the capital account). As is clear from this typology, financial liberalization policies focus on introducing or strengthening the price mechanism in financial markets, as well as on improving the conditions for market competition. According to theory, these elements of financial liberalization help improve the provision of financial services by financial institutions as described above in that they contribute to financial development. For households and firms, these policies are expected to have an impact on financial decision making as the improved provision of financial services is associated with changing prices, transaction costs, and returns on investment, as well as to changing the barriers to bank ownership and access to finance for firm investment. Financial liberalization thus leads to

changing the allocation of (domestic and international) capital, which ultimately also affects the overall growth rate of a country.

The relationship between financial liberalization and economic growth has been extensively discussed in the literature. The empirical literature is not conclusive about whether financial liberalization and growth are indeed correlated positively (Bumann et al., 2013). This may at least partly be due to the fact that liberalization potentially has both positive and negative consequences for the functioning of financial institutions and markets. On the one hand, it has been argued that financial markets are the most efficient mechanism to allocating scarce resources (McKinnon, 1973; Shaw, 1973). Introducing market principles and competition in the banking sector increases interest rates on deposits. These higher interest rates lead to higher saving and investment rates, ultimately contributing to higher growth rates. This also holds for opening up the capital account as part of a financial liberalization strategy. Such a policy may stimulate capital inflows, which raises the availability of funds for investment and growth. Moreover, increasing competition puts pressure on the profit margins of banks, in particular on the interest rates demanded for loans. This reduces the cost of debt, leading to a rise in investment and growth. Furthermore, in a more competitive environment, financial institutions are stimulated to become more efficient. This leads to reducing overhead costs, improving overall bank management, improving risk management, and offering new financial instruments and services (possibly including those imported after capital account liberalization) to the market to keep up with competitors.

On the other hand, however, it has also been argued that financial liberalization may not solve the problem of asymmetric information, preventing financial intermediation from becoming more efficient in a liberalized environment (Stiglitz and Weiss, 1981). It has even been argued that due to financial liberalization, information problems become worse, because increasing

competition leads to a breakdown of relationship lending, which destroys information capital (Boot, 2000). Moreover, competition in financial markets may also imply a reduction in profit margins, contributing to increased financial fragility of financial institutions, as this makes them more prone to financial disruption and stimulates them to conduct risk taking behavior in order to try to remain being profitable under the pressure of falling profit margins. For example, reduced margins may stimulate banks to economize on screening and monitoring efforts and to opt for a gambling strategy when allocating loans, putting less emphasis on risk and more on profit. In this case, financial liberalization triggers crises if it leads to excessive risk taking under the pressure of increased competition (Demirgüç-Kunt and Detragiache, 1998).

2.2 Financial liberalization and capital flight: Theory and previous empirical research

Some studies discussing the relationship between financial liberalization policies and growth have investigated the impact of these policies on capital flows (Labán and Larraín, 1997; Montiel and Reinhart, 1999; Aghion et al., 2004; Desai et al., 2006; and Alfaro et al., 2007). We add to this literature by focusing on the impact of financial liberalization on capital outflows from African countries, using a measure that takes into account both recorded and unrecorded capital outflows, i.e., capital flight. In the literature there are two main approaches to measuring capital flight: the hot money approach and the residual approach. According to the hot money approach, capital flight is defined as short-term private capital flows (associated with other sectors, i.e., excluding the official sector and banks) plus net errors and omissions in the balance of payments (Cuddington, 1986). The residual approach stresses that recorded flows are not capital flight. According to this approach, capital flight is measured as the difference (or residual) between recorded inflows and recorded uses of foreign exchange (World Bank, 1985). Yet, it also acknowledges that in the balance of payments, statistics data

on external debt inflows are often underreported, which is why data from the World Debt Tables are used instead, because the World Bank collects more detailed and accurate data on foreign debt. This adjustment generally leads to recorded inflows being higher than recorded uses of funds, establishing the size of outflows not recorded in the balance of payments, i.e., capital flight. These unrecorded outflows may result from illegal transactions such as money laundering and tax evasion, among others. In this study we use the residual approach to measure capital flight.[1]

In the theoretical literature discussing the determinants of capital flight, several explanations have been put forward, ranging from structural factors (i.e., resource abundance, in combination with poor regulation and bad governance of the home country), the macroeconomic environment (i.e., the home country's economic growth performance, inflation, and fiscal policies), factors related to portfolio choice decisions of the home country's wealth holders (i.e., risk and returns to private investments), the quality of governance of the home country (i.e., the extent of corruption, the quality of regulation), the importance of external borrowing, the importance of the political environment, and hysteresis and habit formation (Ndikumana et al., 2014).

Our discussion of the association between capital flight and financial liberalization policies is based on two theoretical pillars. One pillar is related to models and theories emphasizing risk and returns to private investments and the related portfolio decisions of residents holding domestic wealth (see also Murinde et al., 2014). According to these models, individuals may have incentives to take their wealth abroad, for example when net rates of return on holding foreign assets may be higher, when they aim at diversifying their portfolio by including foreign assets, when they expect that domestic taxes, tariffs, or laws and/or monetary and

[1] See Ndikumana et al. (2014) for a more in-depth discussion of the measurement of capital flight.

fiscal policies (reflected by changes in inflation and/or exchange rates) reduce the net rate of return, and/or when they fear that political instability and/or the quality of (political) institutions (increasing the risk of expropriation) may hurt their wealth held domestically. Thus, if risk-adjusted returns to private investments are relatively higher for foreign than for domestic assets, residents decide to hold their wealth outside their own country. We argue that, at least potentially, financial liberalization influences risk-adjusted returns to private investments.

The second pillar stresses the importance of restrictions on international capital flows. Rather than emphasizing arguments why residents may have incentives to shift money abroad, here we focus on the existence or absence of formal barriers that allow these residents to allocate their wealth outside their own country. As capital account liberalization in terms of reducing capital controls is one of the elements of financial liberalization, these policies obviously have a direct impact on the extent to which formal barriers to capital flows are in place.

Based on the two pillars discussed above, it may be argued that financial liberalization can impact capital flight both positively and negatively. First, from a portfolio model point of view, financial liberalization may both have a positive and a negative impact on the extent of capital flight. On the one hand, by liberalizing financial markets, returns on investments go up as prices (interest rates) go up and/or transaction costs go down. This increases the attractiveness of holding wealth in the home country compared to holding money abroad. Moreover, residents may see financial liberalization policies as a credible signal of the government's commitment to sound economic management. Based on this signal, they may expect improved domestic policy making, reduced policy uncertainty and enhanced institutional quality (Kose et al., 2008). Several studies have stressed that financial liberalization policies, and opening the capital account in particular, may discipline

governments with respect to their fiscal and monetary policy (Obstfeld, 1998; Stiglitz, 2000). The expected improvement of domestic policies, in turn, reduces the risk of investing wealth in the home country—that is, it reduces incentives for capital flight. On the other hand, however, financial liberalization policies may also be seen as increasing uncertainties about macroeconomic developments, such as enlarging the risk of financial crises. If this is the case, the risk of investing at home increases, providing an incentive for residents to divert wealth abroad. In other words, capital flight goes up (Epstein, 2005).

Second, the impact on capital flight of reducing the barriers to capital flows through capital account liberalization is also not clear *a priori*. On the one hand, abolishing capital controls means it becomes easier to shift money abroad. Individuals have many incentives to invest their wealth abroad. They may do so because net rates of return on holding foreign assets may be higher, they expect domestic taxes, tariffs, laws, and/or monetary and fiscal policies to reduce the net rate of return, and/or they fear political instability and/or the quality of (political) institutions may hurt their wealth. For any of the above reasons, financial liberalization provides stronger incentives to allocate capital outside the country (Dutta, 2011). On the other hand, however, capital account liberalization may also reduce capital flight. Without capital controls, it is easier for residents to transfer money abroad, reducing incentives to illegally transfer money into foreign assets. Moreover, if investors aim at diversifying their portfolio but capital controls and other restrictions inhibit such a diversification strategy, this may lead to capital flight. In this situation, financial liberalization may reduce incentives for capital flight because capital can move freely. Due to liberalization, illegal flows turn into legal flows (Mody and Murshid, 2005).[2]

[2] An alternative view may be that financial liberalization has no relationship with capital flight, because residents may have other reasons than those related to portfolio decisions and/or the existence/absence of formal barriers to capital flows to hold their wealth abroad. They may engage in capital flight, for example, because their wealth has been generated through illegal transactions and/or corruption, or they want to avoid

In the literature the relationship between financial liberalization and capital flight has hardly been addressed empirically. One of the few studies investigating the relationship between financial liberalization and capital flight is by Lensink et al. (1998). The analysis in this study is based on a portfolio model, in which capital flight is one of the assets, alongside bank deposits, fixed assets, and net other assets.[3] This portfolio model is estimated using data from nine sub-Saharan African countries for the period 1971–1990. Next, the estimation results of the portfolio model are used in a more complete structural model of the economy, including the banking sector, the government, and the external sector. Using this structural model, Lensink et al. (1998) analyze the impact of three types of financial market liberalization measures on capital flight, namely, an increase of the nominal interest rate on bank deposits, a decrease in reserve requirements, and a change in the exchange rate policy. The simulation results indicate that these policy measures reduce capital flight, but the effects are very small. The authors therefore conclude that while financial liberalization policies may be helpful, it should certainly not be seen as a panacea for curtailing capital flight.

In another, more recent, study Yalta and Yalta (2012) also focus on the causal link between financial liberalization and capital flight. The approach of their research is different from the previous study. Yalta and Yalta (2012) apply panel data regressions using data for 21 emerging economies for the period 1980–2004. Whereas Lensink et al. (1998) look at the impact of domestic banking reforms, Yalta and Yalta (2012) focus on capital control liberalization, as measured by Chinn and Ito (2008). They find no evidence of a causal relationship between financial liberalization policies and capital flight. Their findings are slightly different from that of Lensink et al. (1998), which may be due to the differences in the country sample, time period, and/or empirical method applied. In the context of our study,

paying taxes, among others. In the empirical analysis, we check for this possibility by adding various control variables to our model, which may pick up these alternative reasons for residents to engage in capital flight.

[3] See also Collier et al. (2001) for a similar approach.

Lensink et al. (1998) seems most interesting as a reference point, since they also focus on the sub-Saharan African region and use a portfolio model framework.

Next to these two empirical studies, descriptive country case studies have been carried out by Schneider (2003) and in Epstein (2005). These studies generally find no evidence that capital flight diminishes after countries have liberalized their financial markets.

Given the above ambiguity (both theoretical as well as empirical), analyzing the relationship between financial liberalization and capital flight becomes an empirical question. We will address this question in the remainder of this paper.

3. Measuring financial liberalization

The literature distinguishes three broad categories of financial liberalization measures, namely, capital account liberalization, equity market liberalization, and banking sector liberalization. Most authors rely exclusively on capital account measures (Lane and Milesi-Ferretti, 2001; Edison et al., 2004; Kose et al., 2006; Prasad et al., 2003; Quinn and Toyoda, 2008). These measures can be divided into two subcategories. *De jure* measures reflect the existence of legal restrictions on international capital transactions, in most cases based on information from the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) of the IMF. *De facto* measures refer to actual flows and stocks of capital. Some studies focus on investigating the impact of equity market liberalization, using measures of restrictions on the international sale/purchase of equities (Bekaert and Harvey, 2000; Bekaert et al., 2005). Others examine banking market liberalization by looking at government policies on interest deregulation and relaxing credit allocation regulations (Demirgüç-Kunt and Detragiache, 1998; Kaminsky and Schmukler, 2003).

In this paper we do not restrict the analysis to one specific type of financial liberalization policy, but seek to find evidence for a relationship between various dimensions of financial liberalization and capital flight. This is because, at least in theory, any type of financial liberalization can change the risks and returns to investments, which may lead to a reallocation of wealth between home and foreign assets. For this purpose, we use a dataset developed by Abiad et al. (2010). This dataset takes into account six different dimensions of financial liberalization policies and one measure of bank regulation policies for a set of 91 developed and developing countries during the period 1973–2005. More precisely, using this dataset we have the following information:

– *Credit controls and reserve requirements*: focuses on directed credit towards favored sectors or industries, ceilings on credit toward sectors, and minimum reserve requirements;

– *Interest rate controls*: deals with direct interest rate controls by the government, and/or interest rate controls through the use of floors, ceilings, and interest rate bands;

– *Entry barriers*: deals with licensing requirements for newly established domestic financial institutions, entry barriers for foreign banks, and restrictions on certain types of banking practices, such as specialized bank services or establishing universal banks;

– *State ownership in the banking sector*: refers to the share of the banking sector assets controlled by state-owned banks;

– *Restrictions on international financial transactions*: refers to capital account controls and restrictions, transaction taxes, and the use of multiple exchange rates;

– *Securities market policies*: relates to policies with respect to the auctioning of government securities, the establishment of securities markets, tax incentives related to

investments in securities, and policies regarding the openness of markets to foreign investors; and

– *Prudential regulations and supervision of the banking sector*: refers to (1) the adoption of risk-based capital adequacy ratios based on the Basel standard; (2) the degree of independence of the banking supervisory agency; and (3) the coverage of supervisory oversight. For this dimension, more government intervention is interpreted as a positive reform policy, one that contributes to improving the efficiency of the banking system.

For each of the above dimensions, a country obtains a score that runs from zero to three. For the six dimensions reflecting financial liberalization, the meaning of the scores is as follows: 0 means that for a particular dimension of financial liberalization policies, the financial markets are fully repressed; 1 means partial repression; 2 means largely liberalized; and 3 means fully liberalized.[4] Repression or liberalization of a certain dimension thus refers to the extent to which the government interferes with financial markets. For the last dimension, describing the regulation and supervision of the banking sector, the interpretation of the scores is different. Here, 0 means that the country has put in place none of three dimensions of regulation and supervision (i.e., capital adequacy ratios, independency of the central bank and a wide coverage of supervisory oversight); 1 means that the country has put in place one of the three dimensions of regulation and supervision; 2 means that the country has put in place two of the three dimensions of regulation and supervision; and 3 means that the country has put in place all three dimensions of regulation and supervision. We create an overall financial liberalization measure by adding up the separate scores for each of the seven financial

[4] A more detailed description of the coding system can be found in Abiad et al. (2010).

liberalization dimensions.[5] The overall measure has a score that can take values between 0 and 21.

The financial reform dataset we use has several advantages over other measures used in the literature. First, our data allow for identifying changes in financial liberalization policies over time, as well as for quantifying the extent to which these policies contribute to reforming financial markets. Second, as was mentioned above, in several papers the analysis focuses on just one or a few dimensions of financial reform. Yet, financial liberalization policies consist of a range of different dimensions, which may either influence the risk and returns on investment and thus the portfolio decisions of the residents of a country, or change the extent to which barriers to moving capital flows across borders are in place, which may affect the extent of capital flight. Specifically, financial liberalization may affect portfolio decisions in along the following lines:

- Relaxing interest rate controls leads to rising interest rates on deposits;
- Reducing or abolishing credit control policies and reserve requirements increases the efficient allocation of resources by banks, which, in a competitive bank market environment, will also increase the interest rates on deposits;
- Relaxing entry barriers for banks and bank privatization programs have a similar impact on deposit rates, because both these policies increase bank competition. At the same time, however, increasing bank competition may also increase the probability of financial crises, which raises the risk of investing in the home country;
- Policies focusing on developing equity markets contribute to making these markets more efficient, ultimately leading to higher market returns;

[5] We use this approach following Abiad et al. (2010).

– Liberalizing the capital account directly contributes to lowering the barriers to capital outflows;

– Establishing or improving the financial regulation and supervision of banks increases the stability of the banking sector, which may reduce the probability of financial crises. This, in turn, may contribute to reducing the risk on domestic investments;

– Finally, all of the above may act as a signal of credible and prudent macroeconomic policies, which may reduce the risk of investing in the home country.

Therefore, all possible dimensions of financial liberalization policies should be taken into account when we evaluate their impact on capital flight.

Figure 1 summarizes the overall trends in financial liberalization policies in Africa during the period 1973–2005.[6] The figure shows when reforms and reversals of reforms took place. Moreover, it indicates incidents of large policy reforms and reversals (i.e., a change of the overall financial liberalization measure of three points or more). As can be seen from this figure, most policy changes took place during the period 1990–1998. During these years, in more than 40 percent of the countries in our dataset financial reforms were carried out. Moreover, in most years during this period, large reforms were observed. This is especially true for the years 1993 and 1996. Interestingly, a few countries also reversed some of the liberalization policies. This particularly holds for 1994, when two of the eighteen countries returned to partly regulating their financial markets. The pattern of liberalization policies in Africa deviates at least to some extent from the worldwide trend of liberalization during the period 1973–2005 as observed in Abiad et al. (2010). Whereas worldwide financial liberalization policies were carried out on a large scale since the early 1980s, in Africa the

[6] The percentages on the y-axis refer to the share of countries experiencing financial reforms during a certain year.

period of liberalization took off in the 1990s. At the same time, as in Africa, most of the liberalization policies were carried out during the first half of the 1990s.

<Figure 1 here>

Table 1 shows summary statistics for the various financial liberalization measures. First, the table shows that on average the value of the overall financial liberalization measure for the period 1973–2005 was slightly above 7. This is considerably lower as compared to the averages for countries in other regions (Abiad et al., 2010), indicating that financial liberalization policies have been pursued much less strongly in Africa than in countries in Latin America and Asia. Next, the table shows that relaxing entry barriers for financial institutions is the most widely used type of financial liberalization in the countries in our sample (average 1.6), followed by relaxing credit and interest rate controls (1.27 and 1.2, respectively). Financial regulation measures have been pursued the least (0.43). Large policy changes (liberalizations as well as reversals) occurred only very infrequently.

<Table 1 here>

Figure 2 and Table 2 present the trends in financial liberalization policies for individual countries. Figure 2 shows that, whereas at the beginning of the 1970s the overall financial liberalization measure varied between 0 and 8, in the mid-2000s the measure had increased to between 14 and 18. The figure also shows that in most African countries the strong wave of liberalization policies started in the early 1990s. The group of strongly reforming countries include South Africa, Nigeria, Tanzania, Madagascar, Kenya, and Uganda. Among the weak reformers are countries such as Ethiopia, Algeria, Ghana, Zimbabwe, and Cameroon. Table 2 shows the same information, this time presenting the country-specific five-year averages of the value of the overall financial liberalization measure, focusing on the first six of the seven

policy measures. The table highlights (in bold) periods and countries during which major reforms took place, corresponding to changes in the financial liberalization measure of five or more points. As expected, in almost all cases these major reforms took place during the first half of the 1990s.

<Figure 2>

<Table 2>

4. Capital flight measurement

As discussed previously, in the literature several methods of measuring capital flight are available. Among these, the so-called residual method, proposed by the World Bank (1985), has received by far the most attention. The residual method calculates capital flight as the residual difference between capital inflows and recorded foreign exchange outflows. Capital inflows are calculated based on debt stocks reported in the World Bank's *Global Development Finance*. The recorded foreign exchange outflows are obtained from *Balance-of-Payments Tables* published by the IMF. In this paper, we use the residual method, but take into account a number of refinements proposed by Boyce and Ndikumana (2001) and Ndikumana and Boyce (2010). More specifically, we calculate capital flight for country *i* in year *t* as:

$$CF_{it} = \Delta\, DEBTADJ_{it} + DFI_{it} - (CA_{it} + \Delta\, RES_{it}) + MISINV_{it} \qquad (1)$$

where *CF* is the amount of capital flight for country *i* in year *t*; $\Delta\, DEBTADJ$ is the change in the country's stock of external debt, adjusted for cross-currency exchange rate fluctuations in order to take into account the fact that debt is denominated in various currencies and then aggregated in US dollars; *DFI* is net direct foreign investment; *CA* is the current account

deficit; Δ *RES* is the change in the stock of international reserves; and *MISINV* is net trade misinvoicing (Ndikumana and Boyce, 2011). All variables in the equation are in 2010 US dollars and are normalized by dividing by GDP (GNP). The specification in equation (1) contains two refinements of the original residual method specification as developed by the World Bank (1985). First, it incorporates adjustments for trade misinvoicing (Lessard and Williamson, 1987). Second, it makes adjustments for the impact of exchange rate fluctuations on the dollar value of external debt. Ndikumana and Boyce (2010) make two further refinements to the specification expressed in equation (1). First, they adjust the change in debt to account for debt write-offs. This may be important in order to correctly calculate the stock of debt and the value of debt service. On the one hand, debt write-offs lead to a reduction of the stock of debt. At the same time, however, write-offs do not lead to changes in the flow of debt service. Therefore, not correcting for debt write-offs may lead to an overstatement of debt service and an understatement of the year-to-year change. Second, Ndikumana and Boyce (2010) include an adjustment for the underreporting of remittances.

Table 3 provides information about trends in capital flight during the period 1973–2005. During this period, annual average capital flight from the 18 countries in the sample amounted to almost 1.5 billion US dollars (in real 2010 US dollars). Capital flight was especially high during the periods 1976–1978, 1985–1987 and 2000–2002 when the annual average outflows were around 2.5 billion US dollars. Outflows were relatively modest during 1997–1999 when they amounted to only 400 million US dollars annually. In absolute terms, the largest amount of capital flight over the entire 1973–2005 period has been recorded for Algeria, Nigeria, South Africa, and Cote d'Ivoire. The smallest amount of capital flight has been recorded for Burkina Faso, Uganda, Ghana, and Madagascar.

In relative terms, average annual outflows for the 18 countries in the sample were 5.5 percent of GDP. As shown in table 3, capital flight was by far the highest for Mozambique (on average 21 percent of GDP during the period 1985–2005), followed by Cote d'Ivoire (11 percent of GDP during 1973–2005) and Algeria (9 percent). It was low as a ratio of GDP for Burkina Faso (1.5 percent), Uganda (2.0 percent) and South Africa (2.3 percent). In table 3 the five-year average capital flight to GDP ratios of 10 percent or higher are highlighted (in bold). As expected, Mozambique experienced several episodes of high capital flight. This also holds for Cote d'Ivoire, Nigeria, and Madagascar. Interestingly, the highest reversal of capital flight is also recorded for Mozambique (during 2003–2005).

<Table 3>

5. Data and methods

We use data for 18 African countries, namely, Algeria, Burkina Faso, Cameroon, Cote d'Ivoire, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Morocco, Mozambique, Nigeria, Senegal, South Africa, Tanzania, Tunisia, Uganda, and Zimbabwe. As discussed in section 4, our financial liberalization data are from Abiad et al. (2010). The data for capital flight are from Ndikumana and Boyce (2010). Information regarding the macroeconomic control variables mainly comes from the World Development Indicators. Data for the political regime variable is from the Polity IV project database.[7]

Our dependent variable is the real capital flight to real GDP ratio. We investigate whether the value of this ratio can be explained by our measure of financial liberalization, adding a set of control variables that have been shown to be potentially important in explaining capital flight in previous studies. Our empirical model can thus be described as follows:

[7] See the following website: http://www.systemicpeace.org/polity/polity4.htm

$$CF_{it} = \alpha_{it} + \beta_{it}FINLIB_{it} + \gamma_{it}M_{it} + \varepsilon_{it} \quad (2)$$

where CF is the amount of capital flight for country i in year t; α the constant term; $FINLIB$ our measure of financial liberalization; M a vector of control variables; and ε the error term. We estimate a fixed effects model with clustered standard errors.[8]

Our financial liberalization measure can take values between 0 and 21.[9] The vector M consists of nine control variables. It includes the annual inflation rate (measured as the annual change in the GDP deflator). This control variable has been used in several previous studies, because it signals the risks and costs for residents of a country to hold their wealth domestically. It may also be interpreted as an (indirect) signal of the quality of government policies and the extent to which these policies are geared towards long-term stability of the economy. We further add the one-period lagged annual change of GDP per capita and the government consumption to GDP ratio to capture the overall macroeconomic environment. Moreover, we include the annual change in the amount of external borrowing, because previous research has shown this to be an important determinant of capital flight, pointing out that external debt may fuel capital outflows (also known as the "revolving door"; see, among others, Boyce, 1992; Ndikumana and Boyce, 2003). Next, we use the stock of external debt to GDP ratio as a control variable, because high external debt may signal the risk of future tax payments and/or overall macroeconomic instability. Also, the one-period lagged value of the capital flight to GDP ratio is used as a control variable, because in previous research it has been shown that capital flight tends to persist, a phenomenon referred to habit formation (Ndikumana et al., 2014).[10] Furthermore, we control for the political regime in a country, using data from the

[8] The estimations have also been carried out using OLS and random effects. These results (not tabulated) are quantitatively similar to those reported in tables 4 through 9.

[9] Normalizing our financial liberalization measure to observations that take values between 0 and 1 instead of ranging between 0 and 21 do not change the results (not tabulated).

[10] We acknowledge that using the lagged dependent variable as one of the independent variables in a panel data fixed effects model may be problematic as it may give biased estimates. In the literature, this is generally

Polity IV project database. In particular, we use the Polity2 variable, which is an aggregate democracy variable that runs from -10 to 10, where a higher value means a more democratic regime. Finally, we take year effects into account. We specify these year effects by adding a year dummy and a year dummy squared to our model to allow for the fact that these year effects may be non-linear—during some periods capital flight may have been rising continuously, whereas during other periods it may have gone down. When looking at the data in table 3 the influence of time trends may indeed be important for several countries as capital flight seems to have been showing cyclical patterns over the years. In particular, for the African countries in our dataset over the period 1973–2005, the capital flight figures exhibit an inverted-U shaped form, implying that the amount of capital flight on average goes up until the mid-1990s, after which there seems to be a downward sloping trend. We also note that at the end of the period, capital flight seems to rise again.

6. Empirical results

We estimate the model specified in equation (2) without and with control variables. Table 4 shows the results of the simple fixed effects estimations, where we only include financial liberalization variables. The results in column [1] of the table indicate that the relationship between our overall financial liberalization index and capital flight is negative and statistically significant, indicating that capital flight is significantly lower in countries that have carried out more financial reforms.[11]

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referred to as the Nickell (1981) bias. One way to solve this is to use an instrumental variable estimation method. Using such an approach in many cases may pose other problems and restrictions, however. In the literature it has been suggested that if the time dimension of the dataset is sufficiently long (i.e., the number of years for which data are available should be 20 or more; see Beck and Katz, 2011), the Nickell bias may not be that severe and the benefits of applying an instrumental variable approach, such as GMM, may not outweigh its costs. Therefore, since we have data for over 30 years, we do not apply GMM, but stick to the outcomes of the fixed effects estimations.

[11] We redo the analysis as reported in column [1] using the financial liberalization index without the financial regulation measure. This does not change the results (not tabulated).

<Table 4>

In columns [2] to [9] we repeat the estimation, but instead of using the financial liberalization index, we use the data for the various dimensions reflecting financial liberalization separately. With respect to the dimension *credit controls*, we also take into account separately the sub-dimensions *directed credit* and *credit ceilings*. In addition, we take into account *interest rate controls*, *entry barriers* (referring to licensing requirements for newly established domestic and foreign financial institutions, as well as for certain types of banking practices), *privatization* (referring to the extent to which control over the banking sector by the government has been reduced), *capital flow controls* (referring to capital account controls and restrictions, transaction taxes, and the use of multiple exchange rates) and *security markets* (relating to policies creating and/or improving security markets and security market trade). For all dimensions we find a negative and significant relationship between financial liberalization and capital flight, again supporting the view that capital flight is significantly lower in countries that have carried out more financial reforms. The results presented in columns [2] through [9] thus seem to support that financial liberalization matters for capital flight. At the same time, its contribution to explaining capital flight appears to be small as indicated by the very low levels of the R squared.

As was stated in section 2, emphasis is placed on capital account liberalization in the literature analyzing the consequences of financial liberalization. One of the frequently used liberalization measures is the financial openness index constructed by Chinn and Ito (2008). This index measures the extent to which a country has opened up its capital account, where a higher value refers to a more open capital account. The index is comparable to our *capital flow controls* measure for which we report our results in column [8] of table 4. One important limitation of the Chinn and Ito index is that it focuses on only one dimension of financial

liberalization. Yet, we report results of estimations using this index for completeness. Column [10] shows that we do not find evidence that capital account openness as measured by this index is associated with capital flight.

The results presented in table 4 merely show correlations between capital flight and financial liberalization, although we do control for country-specific effects, because as stated above, the analyses have been carried out using fixed effects. Still, to reduce the possibility of omitted variable bias, we need control variables that may at least potentially be important antecedents of capital flight. In table 5 we therefore repeat the analysis presented in table 4 and add a set of control variables, which we described in section 5. Adding control variables substantially increases the explanatory power of the model as illustrated by the much higher R squared. Adding these controls also significantly influences our results, indicating the importance of controlling for variables that proxy for alternative determinants of capital flight. Now, the overall financial liberalization index is no longer statistically significant. This also holds for several of the dimensions reflecting financial liberalization of the banking sector, namely, for policies related to credit controls, directed credit, credit ceilings, and interest rate controls, as well as for the liberalization of security markets. We do, however, find a statistically significant negative association between policies focusing on bank privatization and policies reducing bank entry barriers, on the one hand, and capital flight on the other. These types of policies thus seem to be able to reduce the extent of capital flight that a country is experiencing. Relaxing entry barriers for banks and bank privatization programs directly increases bank competition, which helps to increase the attractiveness for residents to invest their money at home. At the same time, the results in table 5 also show that in the case of policies focusing on reducing capital account controls, we find a statistically significant positive relationship. This lends support to the argument that, especially with this type of financial liberalization policy, capital may flow in and out of the country much more easily. In other words, such policies stimulate rather than

reduce capital flight. The latter result is confirmed by the analysis when using the Chinn-Ito index of financial openness, presented in column [10], although the coefficient for this variable is not statistically significant.

<Table 5>

The results for most of the control variables are not statistically significant in the specifications shown in table 5, with two exceptions. First, the change of debt is highly significant and seems to be a very important determinant of capital flight. This confirms the "revolving door" hypothesis that external borrowing fuels capital flight, a result that has been found in other studies as well (Ndikumana and Boyce, 2003, 2011; Collier et al., 2004; Beja, 2007b). The strong correlation between external borrowing and capital flight has been associated with illegal transfers and the embezzlement of externally borrowed funds (Ndikumana et al., 2014). Second, the inflation rate is positively and significantly related to capital flight, confirming the hypothesis that high rates of inflation have an adverse impact on the risk-adjusted rate of return on domestic investment. There is also weak evidence that capital flight shows a cyclical pattern over time, because in some of the specifications presented in table 5 the coefficient on the squared term of the time trend is statistically significant. Based on the results presented in table 5, we conclude that, even after controlling for other variables that may explain the capital flight phenomenon, still some types of financial liberalization policies remain relevant in explaining capital flight.

Robustness checks

We continue carrying out a number of robustness checks. First, we transform the financial liberalization index, as well as the variables representing the various dimensions of financial liberalization, into dummy variables. One potential criticism of the data we use is that the

financial reform variables take values from 0 to 21 (and from 0 to 3 for the separate dimensions of financial liberalization), assuming that they can be interpreted as continuous variables. Yet, the variables are ordinal, meaning that we must be careful in interpreting the results of the fixed effects regression results. To analyze whether our interpretation of the estimation results in table 5 is justified, we create dummy variables, which take the value 1 if the overall financial liberalization index (or the index for a specific dimension) is above the average value of the overall index (or dimension) and 0 otherwise.[12] The results are shown in table 6, which are similar to those in table 5. Again, we find that for the overall financial liberalization index, as well as for several of the dimensions reflecting financial liberalization of the banking sector and liberalization of the securities markets, there is no statistically significant association with capital flight, but we do find a statistically significant negative association between policies reducing bank entry barriers. We also find that policies focusing on reducing capital account controls are associated positively with capital flight, corroborating the results shown in table 5. The latter result is confirmed when using the Chinn-Ito index of financial openness, although again the coefficient for this variable is not statistically significant. The only difference between the results in tables 5 and 6 is that in table 6 we do not find a statistically significant negative relationship between policies focusing on bank privatization and capital flight (although the coefficient of the privatization variable is close to being statistically significant). Overall, however, the results in table 6 (including those of the control variables) confirm those presented in table 5.

<Table 6>

Next, in table 7 we present the results of the estimation, leaving out South Africa and the North African countries (Algeria, Egypt, Morocco, and Tunisia). One may argue that these

[12] Average values refer to the sample average over the entire sample period.

countries are different as they are in a different stage of economic development. Most importantly, financial market development and per capita income of these countries are significantly higher than in the other countries in our sample. In order to control for the fact that the different macroeconomic settings of these countries may drive the results of the relationship between financial liberalization and capital flight for the African region as a whole, we re-estimate our models without these countries. This means that we focus on a sub-sample of purely sub-Saharan African countries (excluding South Africa). The results presented in table 7 are very similar to those reported in table 5. Again, we find that for the overall financial liberalization index, as well as for several of the dimensions reflecting financial liberalization of the banking sector and liberalization of the securities markets, there is no statistically significant association with capital flight. At the same time, we do find a statistically significant negative association between policies focusing on bank privatization and policies reducing bank entry barriers, on the one hand, and capital flight on the other. We also find that policies focusing on reducing capital account controls are associated positively with capital flight. The latter result is confirmed when using the Chinn-Ito index of financial openness, as the coefficient for this variable is statistically significant. We therefore conclude that the analysis presented in table 7 corroborates those presented in tables 5 and 6.

<Table 7>

As a third robustness check we leave out South Africa. This country takes a unique position in the region. Since the early 1990s, South Africa has experienced a strong overall liberalization of its economy and much lower levels of capital flight relative to its GDP. By dropping this country from the sample we are able to verify whether or not our results are driven by the more liberalized economy of South Africa. The results, presented in table 8, do not support this conjecture. We again find clear evidence that policies focusing on bank privatization and

policies reducing bank entry barriers are negatively associated with capital flight, and that policies focusing on reducing capital account controls are associated positively with capital flight.

<Table 8>

Finally, we analyze the relationship between financial liberalization and capital flight by using only the data for the period from 1990 onwards. As figures 1 and 2 clearly show, the trend in financial liberalization shows a structural break starting around 1988–1990. Financial liberalization takes off from the late 1980s for most countries in the sample. In order to analyze the impact of this trend, we control for this structural break and do a sub-sample test by focusing on the post-1980s period only. This almost halves the number of observations. Table 9 reports the results of this analysis.[13] Focusing only on the data from 1990 onwards does support our previous results with respect to the financial liberalization variables, with one exception: we no longer find a significant positive association between policies focusing on reducing capital account controls and capital flight (although the coefficient is close to being statistically significant). At the same time, we still find that policies focusing on bank privatization and policies reducing bank entry barriers are negatively associated with capital flight. Moreover, we also report a significant and negative association between the overall financial liberalization index and capital flight, serving as an additional support for the importance of financial liberalization policies in explaining the capital flight phenomenon.

With respect to the controls, the behavior of several of these variables appears to be different from what we have reported in previous analyses based on the full sample period. To begin with, the change of debt remains the dominant variable explaining capital flight. Yet, two other

[13] We have left out the time trend variables, because the period 1990–2005 covers the period after the structural break we observed in the capital flight data. As discussed in section 5, capital flight relative to GDP on average goes up until the mid-1990s, after which there seems to be a downward sloping trend in terms of the amount of capital flight relative to GDP for some of the African countries in our dataset.

variables now also appear to be significantly related to capital flight. First, the stock of debt is positively and significantly associated with capital flight. This may indicate that residents fear that high debt levels may lead to higher future tax claims by the government and/or that they take these high debt levels as a signal of macroeconomic mismanagement. In both cases, this may be an incentive to invest wealth abroad. Second, the government consumption to GDP ratio is also positively associated with capital flight. Again, this may indicate that residents engage in capital flight for fear of higher future tax payments and/or macroeconomic instability, because this erodes their domestically-held wealth. Finally, in contrast to the estimation results in the previous tables, the inflation rate is no longer statistically significant.

<Table 9>

7. Summary and conclusions

During the past two to three decades, many African countries experienced considerable capital flight, as residents moved their wealth abroad, using different ways to accumulate foreign assets. At the same time, several of these countries reformed their domestic financial markets in an attempt to improve the functioning of their domestic financial systems and to increase the efficiency of resource allocation—that is, to enhance financial development. Although the empirical literature has discussed potential factors that may determine the occurrence and size capital flight, only very few studies have investigated the relationship between financial liberalization and capital flight. In this study, we have focused on analyzing this relationship using data for a sample of 18 African countries for the period 1973–2005.

From a theoretical perspective, the relationship between financial liberalization and capital flight may go both ways. On the one hand, financial liberalization policies may increase the risk-adjusted return on domestically invested capital compared to investment held abroad.

Moreover, financial liberalization may be seen as a credible signal of the government's commitment to sound economic management, leading to improved domestic policy making, reduced policy uncertainty, and enhanced institutional quality. If this is the case, financial liberalization leads to reduced capital flight. On the other hand, however, with financial liberalization, capital may flow abroad more easily. If individuals have incentives to hold their wealth abroad, then financial liberalization makes it easier to allocate capital outside the country.

Overall, our analysis provides support for the hypothesis that financial liberalization and capital flight are related. The nature of this relationship very much depends on the type of financial liberalization policy, however. Thus, whereas policies focusing on bank privatization and policies reducing bank entry barriers reduce capital flight, liberalizing international capital controls may actually increase capital flight.

We acknowledge that the contribution of financial liberalization policies to explaining patterns of capital flight appears to be relatively small as compared to other explanations that have been discussed in the literature. Our analysis indeed made clear that external debt-fueled capital flight is a dominant phenomenon, a finding that is line with other studies. Still, even after controlling for this phenomenon, as well as for other determinants of capital flight mentioned in previous literature, some types of financial liberalization policies remain relevant in explaining capital flight. We therefore conclude that the outcomes of this study are relevant for financial market policies. At the same time, based on the analysis in this paper and in line with Lensink et al. (1998), we conclude that, while certain types of financial liberalization policies may be helpful, it should certainly not be seen as a panacea for capital flight.

The outcomes of the analysis also support our approach to take into account various dimensions of financial liberalization instead of looking at just one dimension or taking a composite measure of liberalization. As discussed in section 2 of this paper, most of the previous studies focused on just one aspect of financial liberalization, mainly capital account liberalization. While this dimension, too, turns out to be important in our study, focusing on this type of measure would tell only half the story: our analysis suggests that there seem be other dimensions of liberalization that can be equally important for curtailing capital flight.

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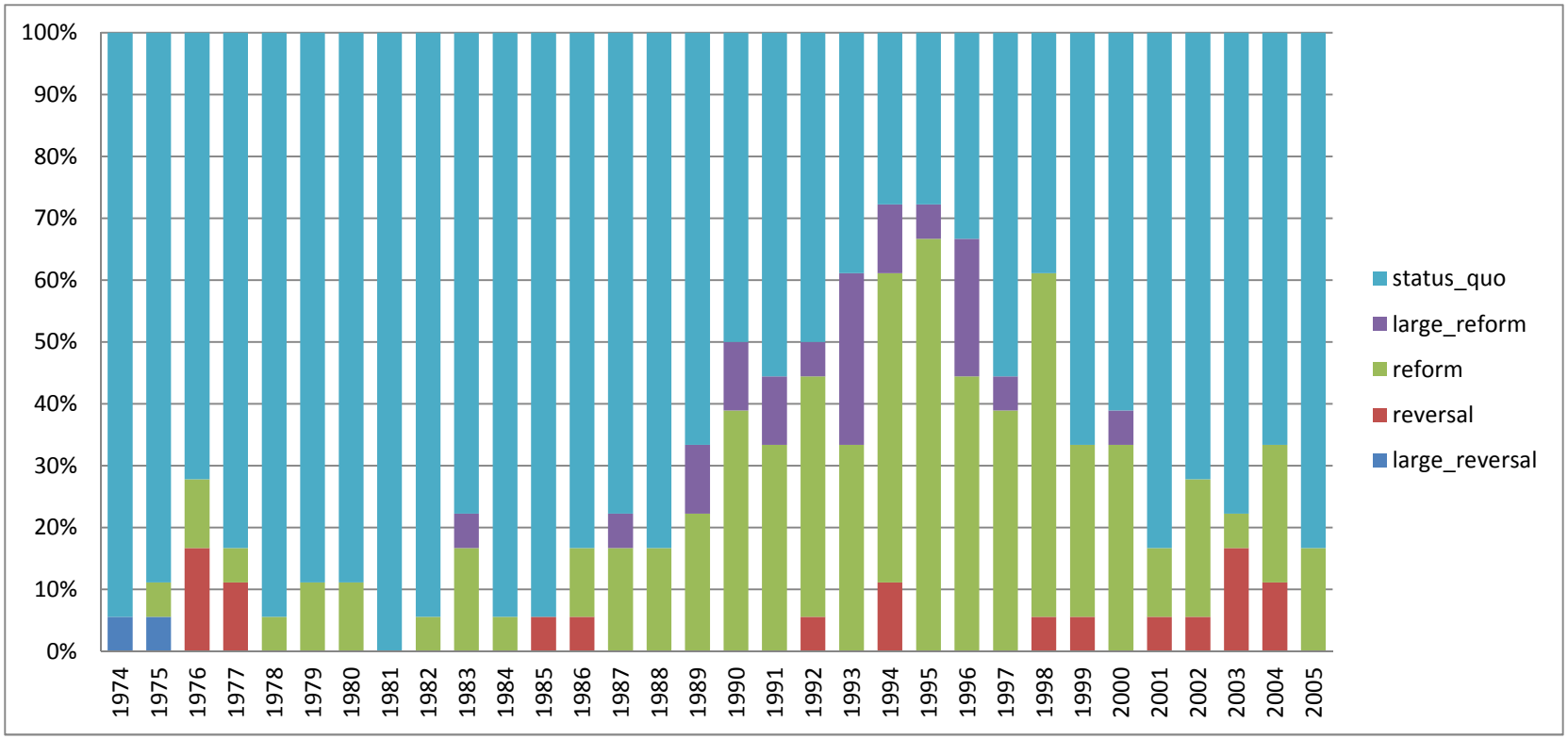
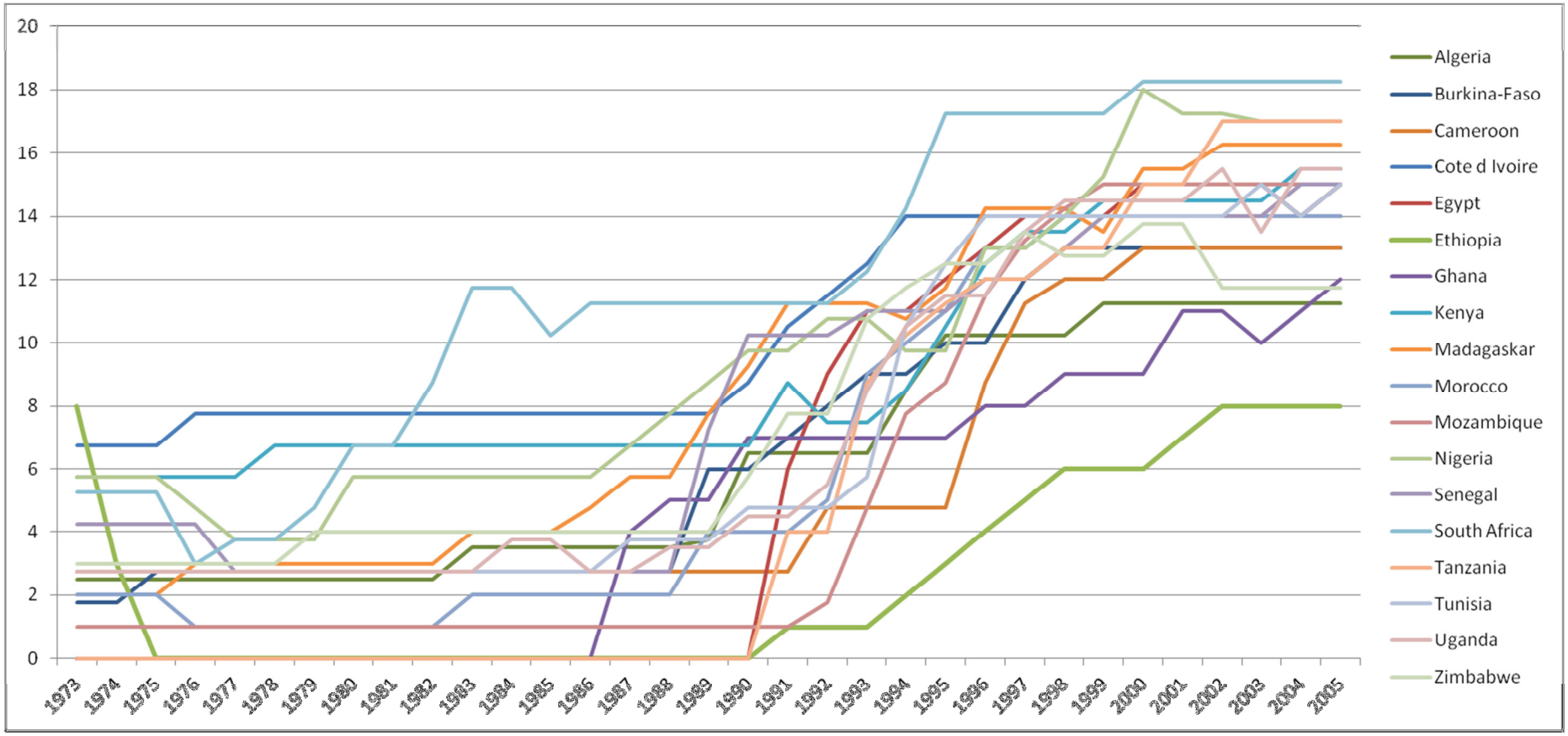
Figure 1: Financial Liberalization in Africa, 1973–2005: Distribution of policy changes (in percentages)



Source: Authors' calculations based on data from Abiad et al. (2010).

Status quo = No change in overall financial liberalization measure
Large reform = Increase in overall financial liberalization measure of three or more
Reform = Increase in overall financial liberalization measure
Reversal = Decrease in overall financial liberalization measure
Large reversal = Decrease in overall financial liberalization measure of three or more

Figure 2: Financial liberalization in Africa, 1973–2005: Trends per country



Source: Authors' calculations based on data from Abiad et al. (2010).

Table 1: Summary statistics for the various financial liberalization measures, 1973–2005

	N	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
Overall financial liberalization index	594	0	18.25	7.13	5.3
Credit controls	594	0	3	1.27	1.04
Interest rate controls	594	0	3	1.20	1.28
Entry barriers	594	0	3	1.61	1.20
Privatization	594	0	3	0.92	1.11
International financial transactions	594	0	3	0.92	0.86
Security markets	594	0	3	0.78	0.76
Regulatory reforms	594	0	3	0.43	0.65
Large reversal	576	0	1	0.003	0.06
Reversal	576	0	1	0.03	0.18
Reform	576	0	1	0.21	0.41
Large reform	576	0	1	0.04	0.20
Status quo	576	0	1	0.71	0.45

Source: Authors' calculations based on data from Abiad et al. (2010).

Table 2: Overall financial liberalization measure per country, five-year averages

Country	Years	Index	Country	Years	Index	Country	Years	Index
Algeria	1973–77	2.5	*Ghana*	1973–77	0	*Senegal*	1973–77	2.75
Algeria	1978–82	2.5	*Ghana*	1978–82	0	*Senegal*	1978–82	2.75
Algeria	1983–87	3.5	*Ghana*	1983–87	0.8	*Senegal*	1983–87	3.95
Algeria	1988–92	5.35	*Ghana*	1988–92	6.2	*Senegal*	1988–92	8.15
Algeria	1993–97	9.15	*Ghana*	1993–97	7.4	*Senegal*	1993–97	11.4
Algeria	1998–02	10.25	*Ghana*	1998–02	9.33	*Senegal*	1998–02	12.8
Algeria	2003–05	10.25	*Ghana*	2003–05	9.4	*Senegal*	2003–05	13.67
Burkina-Faso	1973–77	2.35	*Kenya*	1973–77	5.75	*South Africa*	1973–77	4.5
Burkina-Faso	1978–82	2.75	*Kenya*	1978–82	6.75	*South Africa*	1978–82	6.15
Burkina-Faso	1983–87	2.75	*Kenya*	1983–87	6.75	*South Africa*	1983–87	10.25
Burkina-Faso	1988–92	5.55	*Kenya*	1988–92	7.3	*South Africa*	1988–92	10.85
Burkina-Faso	1993–97	9	*Kenya*	1993–97	10.3	*South Africa*	1993–97	14.65
Burkina-Faso	1998–02	12	*Kenya*	1998–02	13.3	*South Africa*	1998–02	16.25
Burkina-Faso	2003–05	12	*Kenya*	2003–05	14.17	*South Africa*	2003–05	16.25
Cameroon	1973–77	2.75	*Madagascar*	1973–77	2.4	*Tanzania*	1973–77	0
Cameroon	1978–82	2.75	*Madagascar*	1978–82	3	*Tanzania*	1978–82	0
Cameroon	1983–87	2.75	*Madagascar*	1983–87	4.5	*Tanzania*	1983-87	0
Cameroon	1988–92	3.15	*Madagascar*	1988–92	8.65	*Tanzania*	1988-92	1.6
Cameroon	1993–97	6.65	*Madagascar*	1993–97	11.05	***Tanzania***	**1993–97**	**10.25**
Cameroon	**1998–02**	**11.6**	*Madagascar*	1998–02	13	*Tanzania*	1998–02	12.6
Cameroon	2003–05	12	*Madagascar*	2003–05	14.25	*Tanzania*	2003–05	15
Cote d' Ivoire	1973–77	7.15	*Morocco*	1973–77	1	*Tunisia*	1973–77	2.75
Cote d' Ivoire	1978–82	7.75	*Morocco*	1978–-82	1.6	*Tunisia*	1978–82	2.75
Cote d' Ivoire	1983–87	7.75	*Morocco*	1983–87	2	*Tunisia*	1983–87	2.95
Cote d' Ivoire	1988–92	8.85	*Morocco*	1988–92	3.8	*Tunisia*	1988–92	4.35
Cote d' Ivoire	1993–97	12.7	***Morocco***	**1993–97**	**10.2**	***Tunisia***	**1993–97**	**10.55**
Cote d' Ivoire	1998–02	13	*Morocco*	1998–02	13	*Tunisia*	1998–02	12.67
Cote d' Ivoire	2003–05	13	*Morocco*	2003–05	13	*Tunisia*	2003–05	13
Egypt	1973–77	0	*Mozambique*	1973–77	1	*Uganda*	1973–77	2.75
Egypt	1978–82	0	*Mozambique*	1978–82	1	*Uganda*	1978–82	2.75
Egypt	1983–87	0	*Mozambique*	1983–87	1	*Uganda*	1983–87	3.15
Egypt	1988–92	2.8	*Mozambique*	1988–92	1.15	*Uganda*	1988–92	4.3
Egypt	**1993–97**	**11.2**	*Mozambique*	1993–97	8.6	***Uganda***	**1993–97**	**10.1**
Egypt	1998–02	12	***Mozambique***	**1998–02**	**13.85**	*Uganda*	1998–02	12.5
Egypt	2003–05	13	*Mozambique*	2003–05	14	*Uganda*	2003–05	13.7
Ethiopia	1973–77	0	*Nigeria*	1973–77	4.95	*Zimbabwe*	1973–77	3
Ethiopia	1978–82	0	*Nigeria*	1978–82	5.15	*Zimbabwe*	1978–82	3.8
Ethiopia	1983–87	0.4	*Nigeria*	1983–87	5.95	*Zimbabwe*	1983–87	4
Ethiopia	1988–92	2.2	*Nigeria*	1988–92	8.95	*Zimbabwe*	1988–92	5.85
Ethiopia	1993–97	2.6	*Nigeria*	1993–97	10.25	***Zimbabwe***	**1993–97**	**10.75**
Ethiopia	1998–02	5.6	*Nigeria*	1998–02	14.55	*Zimbabwe*	1998–02	12.2
Ethiopia	2003–05	7	*Nigeria*	2003–05	15	*Zimbabwe*	2003–05	12.95

Source: Authors' calculations based on data from Abiad et al. (2010).

Table 3: Capital flight to GDP ratio (CF/Y), five-year averages

Country	Years	CF/Y	Country	Years	CF/Y	Country	Years	CF/Y
Algeria	1973–77	0.097	*Ghana*	1973–77	0.008	*Senegal*	1973–77	n.a.
Algeria	1978–82	0.089	*Ghana*	1978–82	0.036	*Senegal*	1978–82	n.a.
Algeria	1983–87	0.068	*Ghana*	1983–87	0.051	*Senegal*	1983–87	n.a.
Algeria	1988–92	0.071	*Ghana*	1988–92	0.019	*Senegal*	1988–92	n.a.
Algeria	**1993–97**	**0.109**	*Ghana*	1993–97	0.033	*Senegal*	1993–97	n.a.
Algeria	1998–02	0.091	*Ghana*	1998–02	0.040	*Senegal*	1998–02	n.a.
Algeria	2003–05	0.095	*Ghana*	2003–05	0.005	*Senegal*	2003–05	n.a.
Burkina-Faso	1973–77	0.020	*Kenya*	1973–77	0.059	*South Africa*	1973–77	0.007
Burkina-Faso	1978–82	0.040	*Kenya*	1978–82	0.015	*South Africa*	1978–82	0.020
Burkina-Faso	1983–87	0.036	*Kenya*	1983–87	0.028	*South Africa*	1983–87	0.022
Burkina-Faso	1988–92	0.038	*Kenya*	1988–92	-0.002	*South Africa*	1988–92	0.024
Burkina-Faso	1993–97	-0.006	*Kenya*	1993–97	0.005	*South Africa*	1993–97	-0.013
Burkina-Faso	1998–02	-0.037	*Kenya*	1998–02	0.033	***South Africa***	**1998–02**	**0.102**
Burkina-Faso	2003–05	0.002	*Kenya*	2003–05	0.037	*South Africa*	2003–05	-0.017
Cameroon	1973–77	0.006	*Madagascar*	1973–77	0.043	*Tanzania*	1973–77	n.a.
Cameroon	1978–82	0.066	*Madagascar*	1978–82	0.022	*Tanzania*	1978–82	n.a.
Cameroon	**1983–87**	**0.122**	***Madagascar***	**1983–87**	**0.107**	*Tanzania*	1983–87	n.a.
Cameroon	1988–92	0.031	***Madagascar***	**1988–92**	**0.100**	*Tanzania*	1988–92	0.027
Cameroon	1993–97	0.081	*Madagascar*	1993–97	0.086	*Tanzania*	1993–97	0.009
Cameroon	1998–02	0.090	*Madagascar*	1998–02	0.016	*Tanzania*	1998–02	0.036
Cameroon	2003–05	-0.079	*Madagascar*	2003–05	-0.003	*Tanzania*	2003–05	0.045
Cote d' Ivoire	1973–77	0.089	*Morocco*	1973–77	0.048	*Tunisia*	1973–77	0.026
Cote d' Ivoire	1978–82	0.098	*Morocco*	1978–82	0.007	*Tunisia*	1978–82	-0.005
Cote d' Ivoire	**1983–87**	**0.127**	*Morocco*	1983–87	0.088	*Tunisia*	1983–87	0.032
Cote d' Ivoire	**1988–92**	**0.149**	*Morocco*	1988–92	0.070	*Tunisia*	1988–92	0.070
Cote d' Ivoire	**1993–97**	**0.107**	*Morocco*	1993–97	0.041	*Tunisia*	1993–97	0.049
Cote d' Ivoire	1998–02	0.055	*Morocco*	1998–02	0.050	*Tunisia*	1998–02	0.087
Cote d' Ivoire	**2003–05**	**0.126**	*Morocco*	2003–05	0.028	*Tunisia*	2003–05	0.022
Egypt	1973–77	0.084	*Mozambique*	1973–77	n.a.	*Uganda*	1973–77	-0.003
Egypt	1978–82	0.077	*Mozambique*	1978–82	n.a.	*Uganda*	1978–82	0.098
Egypt	1983–87	0.061	***Mozambique***	**1983–87**	**0.324**	*Uganda*	1983–87	0.033
Egypt	1988–92	0.043	***Mozambique***	**1988–92**	**0.290**	*Uganda*	1988–92	0.007
Egypt	1993–97	-0.028	***Mozambique***	**1993–97**	**0.464**	*Uganda*	1993–97	0.005
Egypt	1998–02	0.026	*Mozambique*	1998–02	0.038	*Uganda*	1998–02	0.013
Egypt	2003–05	-0.074	***Mozambique***	**2003–05**	**-0.125**	*Uganda*	2003–05	-0.035
Ethiopia	1973–77	n.a.	*Nigeria*	1973–77	0.067	*Zimbabwe*	1973–77	0.021
Ethiopia	**1978–82**	**0.136**	*Nigeria*	1978–82	0.025	*Zimbabwe*	1978–82	0.048
Ethiopia	1983–87	0.063	***Nigeria***	**1983–87**	**0.141**	*Zimbabwe*	1983–87	0.059
Ethiopia	1988–92	-0.0003	***Nigeria***	**1988–92**	**0.159**	*Zimbabwe*	1988–92	0.073
Ethiopia	1993–97	0.012	*Nigeria*	1993–97	0.010	*Zimbabwe*	1993–97	0.079
Ethiopia	**1998–02**	**0.119**	*Nigeria*	1998–02	0.020	*Zimbabwe*	1998–02	0.087
Ethiopia	2003–05	0.085	***Nigeria***	**2003–05**	**0.165**	***Zimbabwe***	**20030–5**	**-0.105**

Source: Authors' calculations based on data from Ndikumana and Boyce (2010).

Table 4: Financial liberalization and capital flight: Estimation results using the actual index scores, without control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.008***									
	(0.00)									
Directed credit		-0.038***								
		(0.00)								
Credit ceilings			-0.010***							
			(0.00)							
Credit controls				-0.042***						
				(0.00)						
Interest rate controls					-0.025***					
					(0.00)					
Entry barriers						-0.036***				
						(0.00)				
Privatization							-0.065***			
							(0.00)			
Capital flow controls								-0.017*		
								(0.07)		
Security markets									-0.045***	
									(0.00)	
Chinn-Ito capital account openness										-0.013
										(0.17)
Constant	0.160***	0.149***	0.147***	0.153***	0.130***	0.158***	0.161***	0.114***	0.137***	0.069***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Within R squared	0.06	0.05	0.07	0.06	0.03	0.04	0.09	0.01	0.03	0.004
F-test	30.58***	23.85***	27.09***	30.68***	17.42***	21.78***	47.38***	3.24*	14.70***	1.91
Number of observations	513	513	389	513	513	513	513	513	513	455

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Table 5: Financial liberalization and capital flight: Estimation results using the actual index scores, with control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.002									
	(0.54)									
Directed credit		-0.005								
		(0.63)								
Credit ceilings			-0.011							
			(0.69)							
Credit controls				-0.008						
				(0.49)						
Interest rate controls					0.001					
					(0.95)					
Entry barriers						-0.020*				
						(0.06)				
Privatization							-0.038***			
							(0.00)			
Capital flow controls								0.040***		
								(0.00)		
Security markets									0.005	
									(0.78)	
Chinn-Ito capital account openness										0.013
										(0.21)
Time trend	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.003	0.006	0.006
	(0.12)	(0.12)	(0.20)	(0.12)	(0.16)	(0.13)	(0.27)	(0.40)	(0.13)	(0.15)
Time trend squared	-0.0002	-0.0002*	-0.0002	-0.0002*	-0.0002*	-0.0002	-0.0001	-0.0002*	-0.0002*	-0.0002*
	(0.12)	(0.08)	(0.11)	(0.09)	(0.07)	(0.16)	(0.35)	(0.08)	(0.07)	(0.07)
Inflation	0.001**	0.001***	0.001**	0.001***	0.001***	0.001***	0.001**	0.001***	0.001***	0.0005
	(0.01)	(0.01)	(0.05)	(0.01)	(0.01)	(0.01)	(0.04)	(0.00)	(0.01)	(0.26)
GDP growth	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

(lagged)	(0.45)	(0.46)	(0.67)	(0.44)	(0.49)	(0.52)	(0.40)	(0.61)	(0.51)	(0.74)
Stock of debt to	0.012	0.012	0.029	0.012	0.014	0.016	0.018	0.039	0.014	0.020
GDP	(0.65)	(0.62)	(0.34)	(0.64)	(0.59)	(0.53)	(0.47)	(0.14)	(0.59)	(0.51)
Change of debt to	0.838***	0.831***	0.931***	0.829***	0.834***	0.833***	0.804***	0.815***	0.834***	0.830***
GDP	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Political regime	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.001	0.002	0.001
	(0.42)	(0.42)	(0.52)	(0.43)	(0.43)	(0.48)	(0.24)	(0.47)	(0.42)	(0.61)
Government	-0.002	-0.002	-0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002	0.001
consumption to	(0.35)	(0.35)	(0.21)	(0.32)	(0.41)	(0.32)	(0.74)	(0.45)	(0.39)	(0.84)
GDP										
Capital flight to	-0.012	-0.012	-0.041	-0.013	-0.010	-0.015	-0.033	-0.021	-0.010	0.020
GDP (lagged)	(0.76)	(0.76)	(0.36)	(0.73)	(0.80)	(0.71)	(0.40)	(0.57)	(0.79)	(0.65)
Constant	0.056	0.054	0.086*	0.056	0.049	0.069	0.062	0.029	0.048	0.013
	(0.22)	(0.24)	(0.09)	(0.22)	(0.27)	(0.13)	(0.16)	(0.51)	(0.28)	(0.84)
Within R squared	0.34	0.33	0.39	0.33	0.33	0.34	0.35	0.35	0.33	0.33
F-test	20.82***	20.80***	19.24***	20.83***	20.76***	21.31***	22.18***	22.45***	20.77***	17.51***
Number of observations	440	440	321	440	440	440	440	440	440	386

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Table 6: Financial liberalization and capital flight: Estimation results using dummy variables, with control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.016									
	(0.48)									
Directed credit		0.004								
		(0.85)								
Credit ceilings			-0.011							
			(0.69)							
Credit controls				0.006						
				(0.78)						
Interest rate controls					-0.020					
					(0.39)					
Entry barriers						-0.048**				
						(0.03)				
Privatization							-0.035			
							(0.14)			
Capital flow controls								0.046**		
								(0.03)		
Security markets									-0.037	
									(0.11)	
Chinn-Ito capital account openness										0.017
										(0.38)
Time trend	0.006	0.006	0.006	0.006	0.006	0.006*	0.006	0.004	0.006	0.006
	(0.13)	(0.14)	(0.20)	(0.14)	(0.10)	(0.10)	(0.10)	(0.39)	(0.12)	(0.16)
Time trend squared	-0.0002	-0.0002*	-0.0002	-0.0002*	-0.0002*	-0.0002	-0.0002*	-0.0002	-0.0002*	-0.0002*
	(0.12)	(0.07)	(0.11)	(0.07)	(0.09)	(0.11)	(0.08)	(0.16)	(0.10)	(0.10)
Inflation	0.001**	0.001***	0.001**	0.001***	0.001**	0.001***	0.001**	0.001***	0.001**	0.0004
	(0.01)	(0.01)	(0.05)	(0.01)	(0.01)	(0.01)	(0.02)	(0.00)	(0.02)	(0.32)
GDP growth	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.0004

(lagged)	(0.47)	(0.50)	(0.67)	(0.51)	(0.44)	(0.54)	(0.43)	(0.59)	(0.37)	(0.79)
Stock of debt to	0.015	0.014	0.029	0.014	0.014	0.011	0.014	0.030	0.018	0.015
GDP	(0.55)	(0.58)	(0.34)	(0.58)	(0.59)	(0.68)	(0.59)	(0.26)	(0.49)	(0.62)
Change of debt to	0.836***	0.836***	0.931***	0.837***	0.839***	0.832***	0.830***	0.818***	0.822***	0.835***
GDP	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Political regime	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.001
	(0.44)	(0.44)	(0.52)	(0.44)	(0.46)	(0.36)	(0.26)	(0.64)	(0.35)	(0.69)
Government	-0.002	-0.003	-0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002	0.0001
consumption to	(0.38)	(0.40)	(0.21)	(0.41)	(0.31)	(0.46)	(0.62)	(0.39)	(0.46)	(0.87)
GDP										
Capital flight to	-0.010	-0.009	-0.041	-0.009	-0.012	-0.016	-0.015	-0.014	-0.015	0.023
GDP (lagged)	(0.81)	(0.82)	(0.36)	(0.82)	(0.77)	(0.68)	(0.71)	(0.71)	(0.69)	(0.59)
Constant	0.048	0.049	0.086*	0.048	0.050	0.052	0.046*	0.030	0.058	0.005
	(0.28)	(0.27)	(0.09)	(0.28)	(0.26)	(0.24)	(0.31)	(0.51)	(0.20)	(0.94)
Within R squared	0.33	0.33	0.39	0.33	0.34	0.34	0.34	0.34	0.34	0.33
F-test	20.84***	20.77***	19.24***	20.77***	20.87***	21.52***	21.09***	21.46***	21.16***	17.39***
Number of observations	440	440	321	440	440	440	440	440	440	386

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Table 7: Financial liberalization and capital flight: Excluding South Africa, Algeria, Egypt, Morocco, and Tunisia, with control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.005									
	(0.28)									
Directed credit		-0.017								
		(0.23)								
Credit ceilings			-0.014							
			(0.71)							
Credit controls				-0.021						
				(0.20)						
Interest rate controls					0.002					
					(0.88)					
Entry barriers						-0.038***				
						(0.01)				
Privatization							-0.045***			
							(0.01)			
Capital flow controls								0.047***		
								(0.00)		
Security markets									0.009	
									(0.73)	
Chinn-Ito capital account openness										0.026*
										(0.07)
Time trend	0.005	0.006	0.006	0.006	0.005	0.002	0.003	0.004	0.005	0.006
	(0.38)	(0.31)	(0.36)	(0.30)	(0.43)	(0.74)	(0.56)	(0.51)	(0.37)	(0.36)
Time trend squared	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001	-0.0001	-0.0002*	-0.0002	-0.0003
	(0.32)	(0.14)	(0.18)	(0.17)	(0.15)	(0.56)	(0.54)	(0.10)	(0.14)	(0.11)
Inflation	0.001*	0.001**	0.001*	0.001**	0.001**	0.001**	0.001*	0.001***	0.001**	0.001
	(0.06)	(0.02)	(0.08)	(0.02)	(0.03)	(0.04)	(0.08)	(0.01)	(0.03)	(0.25)
GDP growth	0.001	0.001	0.001	0.001	0.0003	0.0004	0.001	-0.0002	0.0003	-0.0004

(lagged)	(0.70)	(0.72)	(0.72)	(0.69)	(0.86)	(0.81)	(0.78)	(0.92)	(0.90)	(0.85)
Stock of debt to	0.036	0.035	0.038	0.033	0.033	0.061*	0.028	0.050	0.031	0.041
GDP	(0.26)	(0.28)	(0.28)	(0.31)	(0.31)	(0.07)	(0.38)	(0.12)	(0.34)	(0.28)
Change of debt to	0.814***	0.808***	0.896***	0.803***	0.825***	0.806***	0.800***	0.811***	0.827***	0.821***
GDP	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Political regime	0.003	0.003	0.002	0.003	0.003	0.003	0.003	0.002	0.003	0.003
	(0.20)	(0.18)	(0.56)	(0.20)	(0.27)	(0.23)	(0.18)	(0.33)	(0.27)	(0.40)
Government	-0.001	-0.001	-0.003	-0.001	-0.001	-0.001	0.0003	-0.001	-0.001	0.004
consumption to	(0.83)	(0.78)	(0.31)	(0.74)	(0.86)	(0.84)	(0.91)	(0.83)	(0.79)	(0.42)
GDP										
Capital flight to	-0.052	-0.056	-0.059	-0.058	-0.046	-0.058	-0.071	-0.060	-0.047	-0.022
GDP (lagged)	(0.27)	(0.24)	(0.26)	(0.22)	(0.33)	(0.22)	(0.13)	(0.20)	(0.32)	(0.68)
Constant	0.075	0.067	0.088	0.067	0.057	0.106*	0.081	0.020	0.057	0.008
	(0.19)	(0.22)	(0.14)	(0.22)	(0.29)	(0.06)	(0.14)	(0.72)	(0.29)	(0.92)
Within R squared	0.37	0.37	0.40	0.37	0.36	0.38	0.38	0.38	0.36	0.37
F-test	16.14***	16.19***	13.99***	16.22***	15.97***	17.05***	17.23***	17.44***	15.98***	13.11***
Number of observations	301	301	246	301	301	301	301	301	301	247

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Table 8: Financial liberalization and capital flight: Excluding South Africa, with control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.002									
	(0.55)									
Directed credit		-0.005								
		(0.65)								
Credit ceilings			-0.011							
			(0.70)							
Credit controls				-0.008						
				(0.51)						
Interest rate controls					0.001					
					(0.93)					
Entry barriers						-0.020*				
						(0.06)				
Privatization							-0.039**			
							(0.00)			
Capital flow controls								0.041***		
								(0.00)		
Security markets									0.006	
									(0.77)	
Chinn-Ito capital account openness										0.014
										(0.19)
Time trend	0.006	0.006	0.006	0.006	0.006	0.006	0.004	0.003	0.006	0.006
	(0.12)	(0.12)	(0.20)	(0.12)	(0.16)	(0.14)	(0.29)	(0.39)	(0.14)	(0.15)
Time trend squared	-0.0002	-0.0002*	-0.0002	-0.0002*	-0.0002*	-0.0001	-0.0001	-0.0002*	-0.0002*	-0.0002*
	(0.13)	(0.08)	(0.11)	(0.09)	(0.08)	(0.17)	(0.38)	(0.08)	(0.08)	(0.08)
Inflation	0.001**	0.001***	0.001**	0.001***	0.001***	0.001***	0.001**	0.001***	0.001***	0.0005
	(0.01)	(0.01)	(0.05)	(0.01)	(0.01)	(0.01)	(0.04)	(0.00)	(0.01)	(0.21)
GDP growth	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

(lagged)	(0.42)	(0.42)	(0.62)	(0.41)	(0.46)	(0.49)	(0.37)	(0.57)	(0.47)	(0.68)
Stock of debt to	0.012	0.013	0.029	0.012	0.014	0.016	0.014	0.039	0.014	0.021
GDP	(0.64)	(0.62)	(0.35)	(0.64)	(0.59)	(0.52)	(0.37)	(0.14)	(0.59)	(0.49)
Change of debt to	0.835***	0.833***	0.935***	0.831***	0.836***	0.835***	0.816***	0.817***	0.836***	0.830***
GDP	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Political regime	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001
	(0.49)	(0.50)	(0.61)	(0.51)	(0.51)	(0.55)	(0.28)	(0.57)	(0.50)	(0.73)
Government	-0.002	-0.002	-0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.002	0.001
consumption to	(0.36)	(0.36)	(0.21)	(0.33)	(0.42)	(0.33)	(0.76)	(0.46)	(0.40)	(0.80)
GDP										
Capital flight to	-0.015	-0.016	-0.046	-0.017	-0.013	-0.018	-0.036	-0.026	-0.014	0.015
GDP (lagged)	(0.70)	(0.70)	(0.32)	(0.67)	(0.74)	(0.65)	(0.36)	(0.51)	(0.72)	(0.73)
Constant	0.055	0.052	0.084*	0.055	0.048	0.067	0.060	0.028	0.047	0.008
	(0.24)	(0.25)	(0.10)	(0.23)	(0.29)	(0.14)	(0.18)	(0.52)	(0.30)	(0.90)
Within R squared	0.34	0.34	0.40	0.34	0.34	0.34	0.35	0.36	0.34	0.33
F-test	20.65***	20.63***	19.03***	20.67***	20.60***	21.14***	22.01***	22.30***	20.61***	17.38***
Number of observations	429	429	310	429	429	429	429	429	429	375

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

Table 9: Financial liberalization and capital flight: 1990-2005 period, with control variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
FINLIB	-0.007**									
	(0.04)									
Directed credit		-0.014								
		(0.33)								
Credit ceilings			-0.042							
			(0.23)							
Credit controls				-0.020						
				(0.18)						
Interest rate controls					-0.016					
					(0.27)					
Entry barriers						-0.034**				
						(0.01)				
Privatization							-0.051***			
							(0.00)			
Capital flow controls								0.023		
								(0.12)		
Security markets									-0.025	
									(0.23)	
Chinn-Ito capital account openness										0.002
										(0.87)
Inflation	0.00002	0.0003	0.0004	0.0003	0.0002	0.0004	-0.0003	0.001	0.0002	0.001
	(0.98)	(0.77)	(0.73)	(0.76)	(0.85)	(0.66)	(0.78)	(0.52)	(0.83)	(0.59)
GDP growth (lagged)	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.002	0.003	0.002
	(0.17)	(0.24)	(0.38)	(0.20)	(0.27)	(0.23)	(0.12)	(0.39)	(0.23)	(0.35)
Stock of debt to GDP	0.070*	0.077**	0.068	0.072*	0.078**	0.083**	0.073**	0.092**	0.078**	0.091**
	(0.07)	(0.04)	(0.16)	(0.06)	(0.04)	(0.03)	(0.05)	(0.02)	(0.04)	(0.02)
Change of debt to	0.570***	0.581***	0.693***	0.575***	0.587***	0.577***	0.520***	0.578***	0.580***	0.580***

GDP	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Political regime	0.002	-0.001	-0.0005	-0.001	-0.001	0.001	0.002	-0.003	-0.001	-0.003
	(0.64)	(0.67)	(0.90)	(0.77)	(0.86)	(0.81)	(0.53)	(0.32)	(0.88)	(0.42)
Government consumption to GDP	0.009	0.007*	0.003	0.007	0.008*	0.009**	0.010**	0.007*	0.009**	0.010**
	(0.04)	(0.10)	(0.61)	(0.12)	(0.05)	(0.04)	(0.02)	(0.08)	(0.04)	(0.04)
Capital flight to GDP (lagged)	0.070	0.076	0.045	0.069	0.081	0.058	0.029	0.067	0.082	0.011*
	(0.25)	(0.21)	(0.52)	(0.25)	(0.18)	(0.33)	(0.63)	(0.27)	(0.17)	(0.07)
Constant	-0.038	-0.087	-0.012	-0.064	-0.092	-0.060	-0.067	-0.168**	-0.107	-0.174**
	(0.63)	(0.28)	(0.90)	(0.45)	(0.23)	(0.40)	(0.32)	(0.02)	(0.13)	(0.02)
Within R squared	0.32	0.31	0.35	0.31	0.31	0.32	0.34	0.31	0.31	0.32
F-test	13.17***	12.55***	11.20***	12.71***	12.60***	13.57***	14.47***	12.83***	12.64***	12.45***
Number of observations	251	251	187	251	251	251	251	251	251	235

Note: The dependent variable is the real capital flight to real GDP ratio. All models are estimated using fixed effects and with clustered standard errors. P-values are reported between brackets. ***, ** and * denote statistical significance at the 1, 5 and 10 per cent level, respectively.

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